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Cash Reserve Ratio and Return on Shareholder's Fund of Deposit Money Banks in Nigeria

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ABSTRACT

This study investigates the impact of the cash reserve ratio (CRR) on the return on shareholders' funds (RSF) of deposit money banks (DMBs) in Nigeria over a 10-year period (2014–2023). It specifically explores the relationship between CRR, liquidity ratio (LQR), loan-to-deposit ratio (LDR), and RSF. The analysis used the least squares econometric method, descriptive statistics, and post-estimation tests to examine the connections between these variables. The results showed that the CRR (β = -0.373341, p-value = 0.6016) has a negative but statistically insignificant effect on RSF, the LQR (β = 0.445698, p-value = 0.6556) has a positive but statistically insignificant effect on RSF, and the LDR (β = -0.139489, p-value = 0.9447) also has a negative but statistically insignificant effect on RSF. The coefficient of determination (R^2) indicated that about 18% of the variation in RSF could be explained by CRR, LQR, and LDR, while the remaining 82% is attributed to other unexamined factors. Additionally, the Durbin-Watson statistic of 1.532892 suggested autocorrelation, implying that many important variables were missing from the model. The study concluded that CRR has a negative effect on the return on shareholders' funds in Nigerian banks. It recommends that the Central Bank of Nigeria (CBN) reconsider its current CRR policy. Specifically, the CBN should assess whether the existing CRR rate aligns with broader monetary policy goals, such as controlling inflation and maintaining adequate liquidity in the banking sector, without harming bank profitability. The study also found that a one-unit reduction in the CRR would result in a 0.373341-unit decrease in RSF, assuming all other factors remain constant. A lower CRR would allow banks to hold more funds for lending, enhancing liquidity and potentially boosting economic growth by providing more credit to businesses and individuals, lowering interest rates, and making borrowing more accessible.

Keywords: Cash Reserve Ratio, Liquidity Ratio, Loan to Deposit Ratio, Return on Shareholders Fund, CBN

1. INTRODUCTION

According to Ogunbiyi &Ihejirika, (2014); Allen and Carletti (2016), banking industry in Nigeria plays a crucial role in the nation's economic growth and development. The industry facilitates the transfer of funds from surplus units (such as households and firms) to deficit units (such as governments and businesses) through financial markets, which include money markets, bond markets, equity markets, and banks. Deposit Money Banks (DMBs) are key players in this process, providing a medium for financial transactions. Over time, DMBs in Nigeria have undergone significant transformations, driven by regulatory reforms, increasing competition, and changing market dynamics.

In Nigeria, the banking industry is one of the most heavily regulated sectors, with its activities closely guided by monetary policies. One such policy is the Cash Reserve Requirement (CRR). Udeh (2015) defines the CRR as the proportion of total deposit liabilities that banks and other financial institutions must hold in reserve with the Central Bank of Nigeria (CBN). A change in the CRR affects the banking system's ability to expand deposits through the multiplier effect. If the CRR increases, it reduces the banking system's liquidity, as banks must retain a larger portion of their deposits as reserves. The reserve requirement is one of the three main tools of monetary policy, alongside open market operations and the discount rate. However, excessively high reserve requirements can have negative consequences. Banks may be forced to limit their lending activities to meet the higher reserve requirements, which could potentially hinder economic growth. Moreover, higher cash holdings can lead to lower returns on equity (ROE) if banks struggle to generate sufficient income from their capital base.

When inflationary pressures arise in the economy, monetary authorities are expected to implement contractionary monetary policies to stabilize prices Onyeiwu, (2012). This may involve increasing the reserve ratio or selling short-term securities to the public, especially to the banks. Such actions reduce the amount of money available for commercial banks to extend credit, which in turn helps reduce inflationary pressure. Conversely, if the monetary authorities aim to stimulate aggregate demand, they may reduce the reserve ratio and purchase short-term securities, such as treasury bills.

Banks, being profit-oriented institutions, are expected to generate profits in order to maximize shareholder wealth (Alper and Anber, 2011). Therefore, their financial performance is of utmost importance. The performance of the banking sector can be assessed using various indicators, such as loans and advances, interest income, and return on assets (Ongore and Kusa, 2013; Uchendu, 2010; Uwazie and Aina, 2015). The performance of banks is

significantly influenced by monetary policies implemented by monetary authorities (Enyioko, 2012). Consequently, monetary authorities regulate the economy by adopting various monetary instruments as necessary.

The relationship between cash reserve requirements and the financial performance of deposit money banks has been explored in several studies. Researchers such as Uremadu (2012), Teja et al. (2013), and Udeh and Nwannebbuike (2015) found a positive and significant link between CRR and bank performance, while others, including Rao and Somaiya (2006), Abid and Lodhi (2015), Yesmine and Bhuiyah (2015), and Oganda et al. (2018), observed a negative or insignificant relationship. This indicates that the findings of previous studies are mixed and contradictory. To date, no research has been identified that uses Return on Shareholders' Fund (RSF) as a parameter to measure bank performance in relation to the CRR in the Nigerian context. Therefore, this study uses RSF as a more comprehensive and effective measure of bank performance, as it offers a clearer understanding of profitability compared to other indicators, such as return on capital employed. For the analysis, the study adopts the Ordinary Least Squares (OLS) method of multiple regression, which is preferred for its desirable properties, including Best, Linearity, Unbiasedness, and Efficiency (BLUE). This study, therefore, examined the effects of cash reserve ratio on the return on shareholder's fund of selected Deposit Money Banks in Nigeria from 2014 to 2023.

The specific objectives are to:

i. To assess the effect of Cash Reserve Ratio on the Return on shareholder's Fund of selected Deposit Money Banks in Nigeria.

ii. To examine the influence of the Liquidity Ratio on the Return on Shareholder's Fund of selected Deposit Money Banks in Nigeria.

iii. To analyze the effect of Loan to Deposit Ratio on the return on shareholder's fund of selected deposit money banks in Nigerian.

To achieve these objectives, the study tests the following hypotheses:

H_{01}: Cash Reserve Ratio has no significant effect on the Return on Shareholder's Fund of selected Deposit Money Banks in Nigeria.

H_{02}: Liquidity Ratio has no significant effect on the Return on shareholder's Fund of selected Deposit Money Banks in Nigeria.

H_{02}: Loan - Deposit - Ratio has no significant effect on the Return on shareholder's Fund of selected Deposit money Banks in Nigeria

2. Literature and Empirical Review

As considered by Udeh (2015); Bawa et al. (2018), cash reserve refer to as the funds that Deposit Money Banks (DMBs) set aside with the central bank for emergency use. The CRR is the minimum percentage of total deposits that DMBs must hold in reserve to maintain economic stability. These reserves ensure that banks have sufficient liquidity to meet customer demands and determine the capital level maintained by banks in relation to their assets. Research by Rawat et al. (2014) explored the impact of CRR, Statutory Liquidity Ratio (SLR), and investment on the loans and advances of the State Bank of India (SBI). Using multiple regression analysis, the study concluded that both CRR and SLR had a significant negative impact on loans and advances, meaning that an increase in these rates would lead to a decrease in the amount of loans and advances available.

Hoque et al. (2020) examined the relationship between CRR and bank profitability in Bangladesh using secondary data from 2011 to 2018. The study found an inverse relationship, indicating that as the CRR decreased, bank profitability increased. The authors recommended that commercial banks plan their operations with a focus on changes in the CRR.

Udeh and Nwannebbuike (2015) investigated the effect of monetary policy instruments, including CRR, on the performance of Zenith Bank in Nigeria. Their study found that liquidity and interest rates had significant effects on performance, while CRR and the minimum rediscount rate (MRR) showed no significant impact. They suggested that Nigerian banks could benefit from taking advantage of the MRR's profit-enhancing features and recommended that the CBN reform its monetary policy to make it more attractive to banks.

Abid and Lodhi (2015) studied the impact of CRR on the profitability of commercial banks in Pakistan, using data from 17 commercial banks between 2005 and 2014. The research concluded that CRR had a negative relationship with bank performance, particularly with Return on Assets (ROA) and Return on Equity (ROE). Their study found that as CRR increased, bank profitability decreased.

Yesmine and Bhuiyah (2015) analyzed the factors affecting the financial performance of commercial banks in Bangladesh, using data from 10 private and 4 public banks over the period 2008 to 2014. They found that credit risk had a negative impact on ROA, while asset utilization and operational efficiency positively influenced bank performance. The study recommended that banks in Bangladesh focus on improving asset utilization, operational efficiency, and managing credit risk to enhance profitability. Uremadu (2012) found a positive relationship between CRR and profitability in Nigeria, based on secondary data from 1980 to 2006. However, his study also suggested that CRR and Statutory Liquidity Rate (SLR) had a negative impact on profitability, concluding that CRR did not significantly affect banks' profitability in Nigeria.

Teja et al. (2013) observed that CRR significantly impacted interest rates and liquidity in banks. They also found that any changes in the CRR had direct effects on the stock market and the overall economy. Oganda, Mogwambo, and Otieno (2018) studied the impact of CRR on the performance of commercial banks in Kenya. Their research indicated that CRR had a negative relationship with bank profitability, suggesting that reducing the CRR would improve the financial performance of Kenyan banks.

Rao and Somaiya (2006) examined how monetary policy, including CRR, SLR, and bank rates, affected the profitability of public sector banks in India. Their study found that lending rates were positively correlated with bank profits, but the CRR, discount rate, and SLR had little significant impact on profitability. They recommended that India's banking sector be regulated according to strict credit policies to address inflation concerns.

Pan, Song, Wang, and Hu (2012) used monthly data from 2006 to 2011 to analyze the effect of revisions in the required reserve ratio (RRR) on the profitability of banks in China. The study found a long-term but negligible negative effect on money circulation and credit scale, indicating that changes in the RRR had little direct impact on liquidity management, inflation, or credit activities.

3. METHODOLOGY

The research design adopted in this study was *ex-post facto*. Data considered for the study were selected mainly from secondary sources obtained from annual reports of selected (14) banks covering the period between 2014 and 2023. Data gathered were analyzed using regression estimation techniques, descriptive statistic, and post-estimation test. The model in this study is based on the model adopted by Bawa e tal (2018) on cash reserve ratio and banks performance. With performance variable modification, the proposed model is hereby stated as

RSF = f (CRR, LQR, LDR) ---------- 1

Where:

RSF = Return on Shareholder's funds for banks' performance

CRR = Cash Reserve Ratio

LQR = liquidity Ratio

LDR=Loan to Deposit Ratio

Hence, the model from equation 1 becomes

$lnRSF = \alpha_0 + \alpha_1 ln\text{CRR}_t + \alpha_2 ln\text{LQ}R_t + \alpha_3 ln\text{LD}R_t \;\; U_t - - - - - - - 2$

Analysis and interpretation

The regression results on cash reserve ratio and return on shareholder's fund (RSF) (2014-2023)

Table 1 Dependent variable: RSF

Variables	Coefficient	Std error	t-stat	Prob
C	-0.253438	5.263891	-0.048146*	0.9632
CRR	-0.373341	0.677781	-0.550829*	0.6016
LQR	0.445698	0.950341	0.468988*	0.6556
LDR	-0.139489	1.930495	-0.072256*	0.9447

***Researcher's computation*, 2025**

R^2 = 0.178110 R^2 (adj) = -0.232834 DW = 1.532892

F-stat = 0.433417 * significant at 5% & 1% level Prob (F- Statistic) = 0.736956

Regression Coefficient

The results from the Least Squares Regression reveal that the cash reserve ratio (CRR) has a negative but statistically insignificant relationship with the financial performance (RSF) of Nigerian deposit money banks. With a coefficient of β = -0.373341 and a p-value of 0.9632, this suggests that a one-unit decrease in CRR is associated with a decline of 0.373341 units in the banks' performance, assuming other factors are held constant.

Similarly, the liquidity ratio (LQR) has a positive but statistically insignificant effect on the financial performance (RSF) of Nigerian deposit money banks, with a coefficient of β = 0.445698 and a p-value of 0.6556. This indicates that a one-unit increase in the liquidity ratio would lead to a 0.445698 unit improvement in financial performance, assuming all other factors remain unchanged.

Likewise, the loan to deposit ratio (LDR) is negatively related to financial performance (RSF), but this relationship is also statistically insignificant, with a coefficient of β = -0.139489 and a p-value of 0.9447. This suggests that a one-unit decrease in the loan to deposit ratio would result in a 0.139489 unit decrease in the financial performance of Nigerian deposit money banks, assuming all other variables are constant.

The coefficient of determination (R^2) indicates that about 18% of the variation in the financial performance of Nigerian deposit money banks can be explained by the cash reserve ratio, liquidity ratio, and loan to deposit ratio. The remaining 82% of the variation is due to other factors not accounted for

in the model. The Durbin-Watson statistic of 1.532892 points to potential autocorrelation in the model, suggesting that a significant portion (82%) of the variables affecting financial performance are missing from the analysis.

Table2. Descriptive Statistic

	RSF	CRR	LQR	LDR
Mean	-0.262297	1.441470	1.751254	1.801075
Median	-0.257024	1.395758	1.739254	1.785948
Maximum	0.078425	1.875061	2.017878	1.902818
Minimum	-0.563270	1.301030	1.582819	1.698970
Std, Dev.	0.234971	0.164852	0.122836	0.056454
Skewness	0.145283	1.993328	0.774749	0.149052
Kurtosis	1.646078	6.019893	3.371446	2.850733
Jargue-Bera	0.798973	10.42216	1.057882	0.046311
Probability	0.670664	0.005456	0.589229	0.977110

Source: ***Researcher's computation*****, 2025**

Table 2 provides the descriptive statistics for the variables examined: Return on Shareholders' Fund (RSF), cash reserve ratio (CRR), liquidity ratio (LQR), and loan to deposit ratio (LDR).

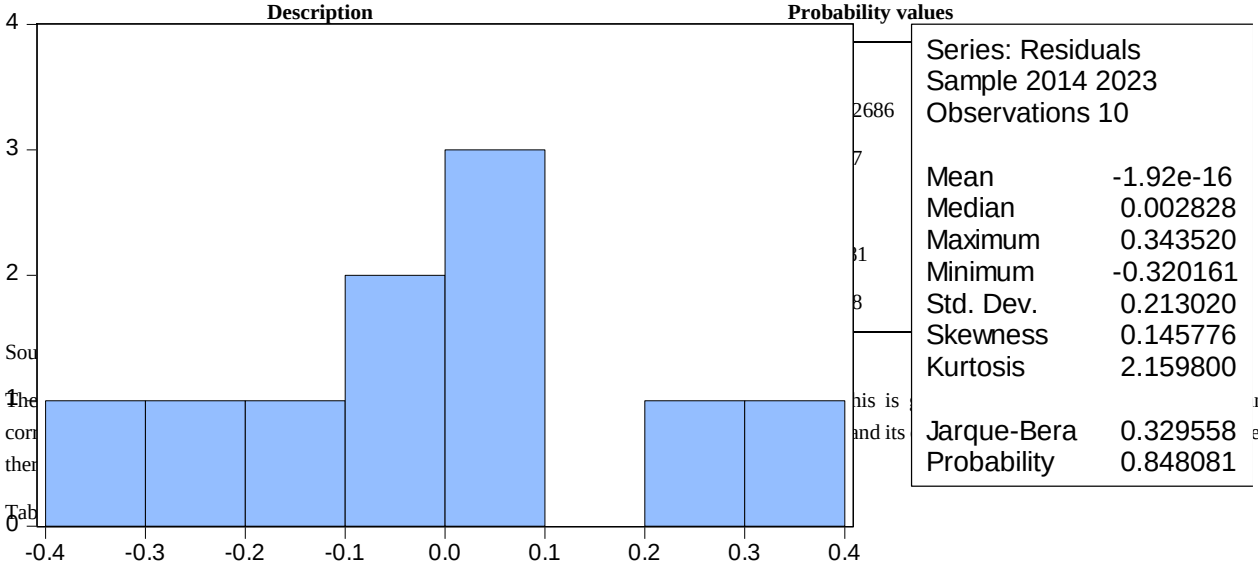
For RSF, the average (mean) value is -0.262297, with a median of -0.257024. The highest observed value is 0.078425, while the lowest is -0.563270. The skewness is 0.145283, indicating a positively skewed distribution. A kurtosis of 1.646078 implies a distribution that is flatter than the normal curve (playkurtic). The Jarque-Bera (JB) test statistic is 0.798973 with a corresponding p-value of 0.670664, suggesting that RSF does not follows a normal distribution.

For Liquidity Rato (LQR), the mean is 1.751254 and the median is slightly lower at 1.739254. The maximum and minimum values are 2.017878 and 1.582819, respectively. A skewness of 0.774749 indicating a positively skewed distribution, while the kurtosis value of 3.371446 implies a distribution that is little higher than the normal curve (leptokurtic). However, the JB statistic of 1.057882 and its p-value of 0.589229 indicate that the distribution of LQR does not meet the criteria for normality.

With regard to Loan to Deposit Ratio (LDR), the mean stands at 1.801075, and the median is 1.785948. The variable ranges between a minimum of 1.698970 and a maximum of 1.902818. The skewness of 0.149052 suggests a slight positive skew, while the kurtosis of 2.850733 implies a distribution that is flatter than the normal curve (platykurtic). The JB statistic is 0.046311 with a p-value of 0.977110, indicating that LDR does not exhibit a normal distribution.

Table 3: Post-Estimation Test

Description	Probability values



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Researcher's computation**, 2025**

Given that the Jarque-Bera probability value is 0.848081, the variables in the model failed to meet the normality test criteria, as this value does not fall within the 5% significance threshold. Consequently, the data used were adjusted to assume a normal distribution.

Table 4. Autocorrelation Test

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. |* . |	. |* . |	1	0.120	0.120	0.1925	0.661
.****| . |	.****| . |	2	-0.514	-0.537	4.1611	0.125
. **| . |	. *| . |	3	-0.274	-0.164	5.4509	0.142
. |*** . |	. |* . |	4	0.355	0.206	7.9686	0.093
. |** . |	. | . |	5	0.281	0.008	9.8596	0.079
. *| . |	. *| . |	6	-0.204	-0.066	11.110	0.085
. *| . |	. |* . |	7	-0.174	0.145	12.323	0.090
. *| . |	. ***| . |	8	-0.126	-0.368	13.274	0.103
. | . |	. *| . |	9	0.037	-0.081	13.440	0.144

Source: *Researcher's computation*, 2025

The autocorrelation test indicates that the model's residuals do not suffer from autocorrelation with the probability values of all the lags greater than 0.05

Findings

The study reveals that the cash reserve ratio (CRR) has a negative, though statistically insignificant, relationship with the financial performance (RSF) of Nigerian deposit money banks (CRR, β = -0.373341, p-value = 0.6016). These findings are consistent with those of Abid and Lodhi (2015), Oganda, Mogwambo, and Otieno (2018), and Hoque et al. (2020), who also reported a negative correlation between the cash reserve ratio (CRR) and bank financial performance (RSF). The broader implication of this finding is that financial market participants may place more importance on other variables (such as interest rates, loan performance, or operational efficiency) rather than the CRR when evaluating a bank's financial health. This could have consequences for investment decisions, as market actors might not view the CRR as a critical factor in short-term financial performance evaluation.

It would be useful to explore other factors that might have a stronger impact on performance, such as capital adequacy, asset quality, and overall management strategies. Additionally, examining the long-term effects of CRR changes on financial performance could offer more insights, as short-term dynamics might not fully capture any potential delayed effects.

Recommendations and Conclusion

Based on the study's findings, the Cash Reserve Ratio (CRR) seems to have minimal significant impact on the financial performance of banks. Therefore, it is suggested that the Central Bank of Nigeria (CBN) re-evaluate its current policy regarding the CRR. The CBN should assess whether the existing CRR rate aligns with its broader monetary policy objectives, such as managing inflation or ensuring sufficient liquidity in the banking system, without adversely affecting bank profitability. Given the limited effect of the CRR on financial performance, it may be worthwhile for the CBN to explore a wider range of policy tools. Relying solely on CRR might not be enough to influence bank performance effectively. The CBN could consider alternatives like targeted liquidity interventions, adjusting the Monetary Policy Rate (MPR), or providing incentives for lending to specific sectors, as these measures could complement CRR adjustments and produce more favorable outcomes. The study also found that a reduction of one unit in the CRR leads to a 0.373341-unit decline in financial performance, all other factors being equal. A lower CRR would allow banks to have more funds for lending, which could boost liquidity in the economy. With increased funds, banks would be able to offer more credit to businesses and individuals, potentially stimulating economic growth. More liquidity and credit availability might also result in lower interest rates, making borrowing more affordable and attractive.

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